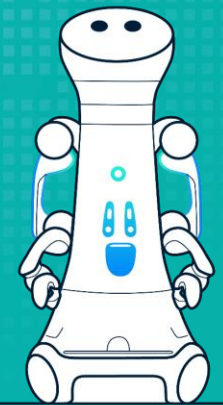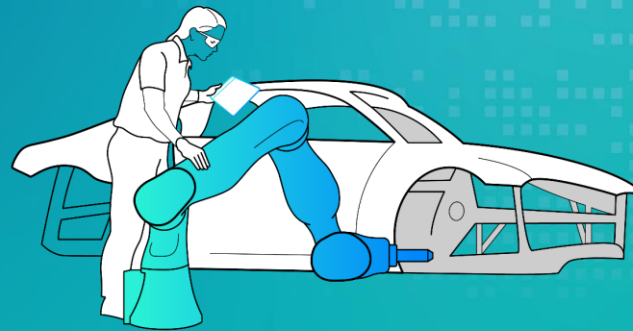ROS-Industrial Europe

News & Updates

Fraunhofer-Gesellschaft
Research and create innovations

At a glance

- World's leading applied research organization
- Founded in Munich (headquarters) in 1949
- Over 30,000 employees divided among 76 institutes and research units
- Annual research budget of €2.9 billion; Fraunhofer generates €2.5 billion of this from contract research
- Research excellence is an overarching goal
- Industry-oriented services for industrial customers

Fraunhofer IPA

Innovation driver with a scientific reputation since 1959

Key figures in 2021 in € million [1]	
Total budget	82
Operating budget	77[2]
Investment budget	5
Industrial revenues	23

Additional Key Indicators

Over 1,000 projects with industrial customers each year

Approx. 1,200 employees at 9 locations (headquarter: Stuttgart)

24 patents granted (5 in Germany, 19 internationally)

870 publications

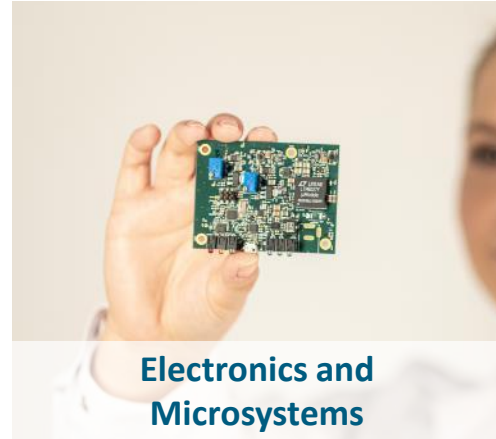© Fraunhofer IPA

© Fraunhofer IPA

1) All values incl. Fraunhofer Austria Research GmbH, Vienna, Business Unit Production and Logistics Management
2) Adjusted operating budget: increased by unburdening internal cost clearing in the amount of € 2 m with IPA value creation

Fraunhofer IPA
With individual industry solutions

Automotive

Electronics and Microsystems

Energy

Health Industries

Machinery and Equipment Industry

Process Industry

One face to the customer

Through the business units, competencies are more closely networked, and totally new approaches are being developed to solve our customers' systematic problems in our core industries.

"We support companies where support generates profit. Because only healthy growth ensures sustainable prosperity."

Prof. Dr.-Ing. Thomas Bauernhansl
Director of Fraunhofer IPA

ROS™
industrial consortium europe

Fraunhofer
IPA

Open Source in der Robotik
Erfolge am IPA

Verkabeln

Montage

Navigation

Polieren

Kollaboration

Kommissionieren
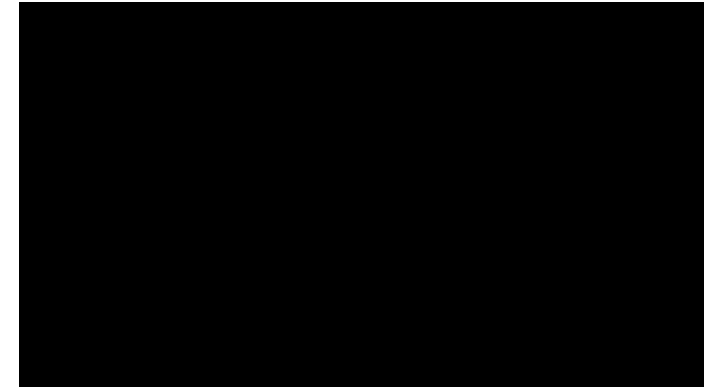
Open Source in der Robotik
Erfolgsgeschichte ROS-basierte Start-ups @IPA

Mojin Robotics GmbH

Drag & Bot GmbH

NODE Robotics GmbH

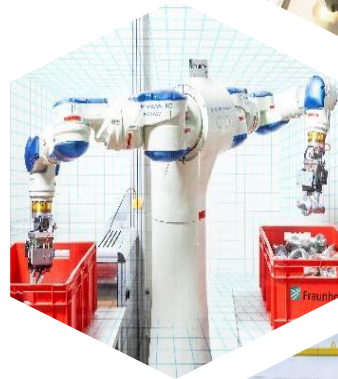# Megatrends growing drive demand for robotics
Shortage of skilled labor main driver in Germany and EU

In the **warehousing industry**, one in five workers is currently older than 55.
DVZ

Germany will lack 307.000 **care** workers in 15 years.
Statista

Robot use in **manufacturing** correlates with high employment and prosperity.
IFR

What's next?

Germany will lack 130,000 workers for housing **construction** targets in the near future
McKinsey

Mechanical **weed control** can help reduce pesticides by half by 2030
European Commission

- Public -

Creating an
Industrial Ecosystem for ROS2

Universal Robots ROS2 Driver
ROS2 UR integration

ROS2 applications for UR robots

- When creating a ROS2 application with an industrial robot it is imperative to have a good ROS2 driver for the robot

- The Universal Robots ROS2 driver is a solid choice and well maintained by the OEM

Features
- Support for most CB3 and e-Series robots
- Integration with ros2_control
- Integration with moveit2
- Speed scaling and emergency stop integration
- Use ROS2 behaviours in robot programs through external Control

Sources:

https://github.com/UniversalRobots/Universal_Robots_ROS2_Driver
https://github.com/UniversalRobots/Universal_Robots_ROS2_Description

ABB Robot Driver
ROS2 ABB robots integration

ROS2 applications for ABB robots

- When creating a ROS2 application with an industrial robot it is imperative to have a good ROS2 driver for the robot

- abb_ros2 is developed by PickNik and based on abb_robot_driver which was developed by ABB in cooperation with ROS-Industrial in the ROSIN project.

Features
- Integration with abb_libegm
- Integration with ros2_control
- Usage with ABB RobotStudio for robot simulation
- Usage with ROS2 simulating robot controllers
- Usage with an actual robot

Sources:
https://github.com/PickNikRobotics/abb_ros2

Phoenix Contact
ROS2 on PLC

### Integrate with industrial hardware via PLC

- When building a robot it can be interesting to use a PLC for low-level control of the connected hardware devices. Until now integrating the PLC and ROS was usually pretty difficult.

- Phoenix Contact develops ROS support for their PLCNext series and is looking for early adopters!

Features

- ROS2 adapter on PLC hardware
- ROS2 software in docker on PLC hardware
- Configurable data exchange slots
- Support for ROS2 message formats
- I/O access
- Support for PLC to Industrial PC

Early adopters contact:
Özkan Öztürk, ooeztuerk@phoenixcontact.com
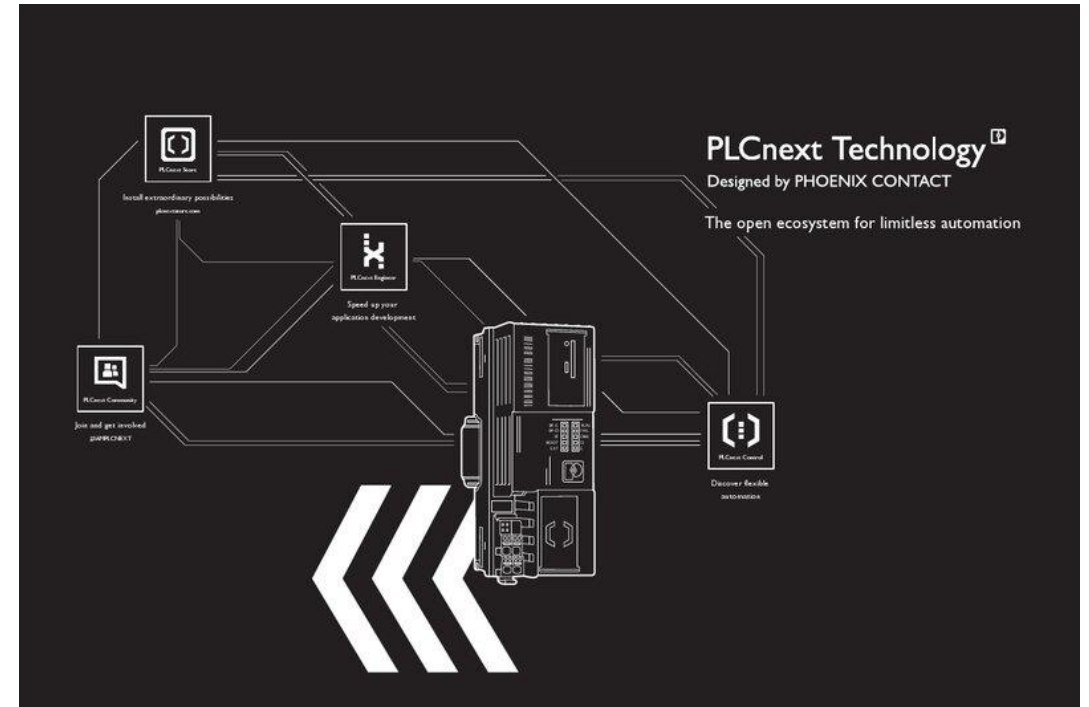
© Phoenix Contact

CANopen
## ROS2 CANopen integration

Communicate via CANopen

- Controlling distributed devices is key in robot and automation systems, CANopen is a prooven in use communications standard for this purpose

- ROS2 integration is taking shape, first beta release is published.

Features
- Based on Lely Core Canopen Stack
- YAML configuration
- Proxy Driver (direct ROS Bridge for devices object dictionary)
- Motion Controller Driver (cia402)
- Operation modes: Service based, Lifecycle service based, ros2-control based

Sources:
https://github.com/ros-industrial/ros2_canopen
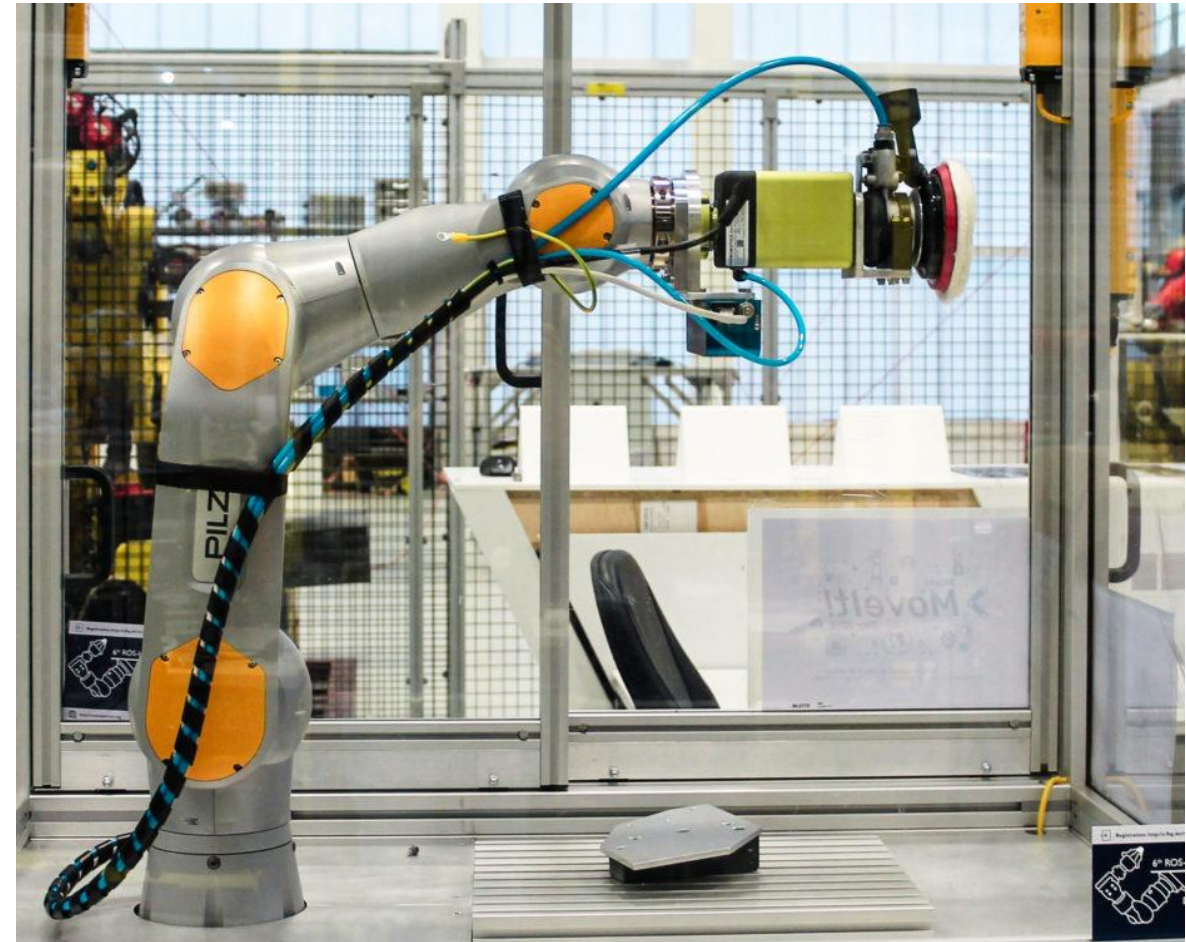
Announcements
ROS-Industrial in Europe

ROS-Industrial Conference 2022
December 15-16, 2022

The 10th edition of ROS-Industrial Conference will be held as a hybrid event. It is not only the annual community meeting for the European ROS-Industrial community but also an opportunity to learn more about the ROS and its use in industry. The conference gives you the chance to see the newest technical developments and to meet people and companies, which are active in the ROS community.

Features:

- 2 Days
- 7 sessions
- ~20 speakers

Register now:

https://rosindustrial.org/rosindustrial-conference-2022

Workshop ROS2 manipulation setup
From CAD model to ROS2 manipulation cell

Learn how to setup a robot manipulation cell in ROS2 from the CAD model to controlling the robot using moveit2.

- Creation of a cell description package from a CAD model using SolidWorks URDF exporter

- Creation of the moveit2 configuration package using moveit setup assistant

- Adoption of the moveit2 configuration package to get the real robot running

- Public -

European Research Project Coresense
Towards machines that understand

- This project is about the use of heterogeneous active representations of the world and the system supporting model-based action for **autonomous robots**.

- The establishment of active mappings to user needs puts delivered **value** at the forefront.

- **Heterogeneity** is handled by using abstract categories.

- Universality is addressed by different **use cases**.

- The system and its engineering are **model-based**.

CoreSense

Social Robots
Understanding Humans

Inspection Drones
Understanding Themselves

Manufacturing Robots
Understanding the Mission

- Public -

Contact

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Robots and assistive systems

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